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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/612,118	07/07/2000	Yan Liu	A-65351-2/DJB	7419

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EXAMINER

LUDLOW, JAN M

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 03/27/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/612,118

Applicant(s)

LIU ET AL

Examiner

Jan M. Ludlow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 50-65 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 50, 51, 53, 55, 56, 59, 61-63 and 65 is/are rejected.
- 7) ☒ Claim(s) 52, 54, 57, 58, 60 and 64 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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1. Claim 62 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 62 refers to step e, which is recited in claim 61, not 59 from which claim 62 depends.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating

obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103^e and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 50-51, 53, 55-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dasgupta et al. ('204) in view of Sorensen et al.

Dasgupta teaches a method for generating an eluent prior to combination with a sample and passage through a chromatographic column, suppressor and conductivity detector (Fig. 1). The eluent is generated by electrolysis in an ion exchange device (fig 4) having a cation source reservoir 74, a permselective barrier 42, an aqueous feed 90 to a base generation chamber 82 and electrodes 54, 56. Ion exchange screens 38, 52 are provided, but ion exchange particles may be used (Col. 5, lines 25-30). Gas produced by electrolysis can be removed prior to use as an eluent (col. 9, lines 4-46). The device can be in the form of nested tubes (Figs. 8-9), with either the product or source channel in the interior or exterior (col. 10, lines 15-45). The device can be used with chromatographic systems, including in gradients (col. 10, lines 46-57), Figure 1.

Dasgupta fails to explicitly teach the claimed barrier thickness or volume ratio.

Sorenesen teaches an improved ion exchange membrane for use in electrolytic cells. It is preferably .01 to 2 mm thick in sheet form (col. 9, line 49).

It would have been obvious to one of ordinary skill in the art to use the membrane of Sorensen in the invention of Dasgupta in order to provide enhanced cell performance as taught by Sorensen. It would have been obvious to use the thicker sheet to provide maximum exchange sites to speed ion transport across the barrier. It would have been further obvious to optimize the volume of the reservoir and chamber in order to optimize function, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233). Note that in figure 9, if the generation channel is the innermost lumen surrounding the electrode and the ion

source is the outermost lumen, the claim limitation is satisfied. It would have been obvious to make the device of Dasgupta in relative dimensions approximating the Figures in order to make the device as shown. It would have been obvious to provide an ion exchange bed in place of the ion exchange screens as taught and to provide an uncharged screen to support the ion exchange resin as was known in the art, e.g., as an extended frit structure.

2. Claims 59, 61-63, 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dasgupta.

The teachings of Dasgupta are given above. A pump 22 is shown coupled to the outlet of the generation cell.

Dasgupta fails to teach a pump upstream of the generation chamber.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the pump upstream of the electrolytic cell in order to provide the flow pattern shown in an art recognized alternative. Placing a pump at any point in the flow line results in pushing or drawing the fluid through the line.

2. Claims 52, 57, 54, 58, 60, 64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

3. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach or suggest the instant methods of generating an acid or base in an electrolytic cell with an ion exchange barrier in which the barrier is at least

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1mm thick and the pressure ratio or value is as claimed, or using an upstream pump and the pressure ratio is as claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jan M. Ludlow whose telephone number is (703) 308-4039. The examiner can normally be reached on Monday-Thursday, 11:30 am - 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Jan M. Ludlow
Primary Examiner
Art Unit 1743

jml
March 23, 2003